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**Employment:**

2/97-	Staff Scientist, Sandia National Laboratories
7/95-	Limited Term Employee, Sandia National Laboratories
1/93-6/95	Exxon Research and Engineering: Postdoctoral position with Gary Grest
10/91-12/92	Forschungszentrum Juelich, Germany: Postdoctoral position with Kurt Kremer

**Education:**

1991 Ph. D. Physics, The Johns Hopkins University

1984 B.S. (Physics) and B.A. (Mathematics) *summa cum laude*, University of Cincinnati  
Both degrees with Departmental High Honors

**Affiliations:**

American Chemical Society  
American Physical Society  
Biophysical Society

**Awards:**

2001 Sandia Individual Performance Award  
2001 Sandia Computational Science 1st place prize  
2002 Sandia Award for Excellence  
2003 Sandia Individual Performance Award  
2006 Sandia Individual Performance Award  
2010 Fellow American Physical Society

**External Funding:**

NIH R21 grant 9/2006 – 9/2009  
“Engineering Fusogenic Properties of Lipid Bilayers”

## Publications

1. Mark Stevens, J. Grothaus, P. Boolchand, and J. Gonzalez Hernandez, "Universal structural phase transition in network glasses," *Solid State Comm.* **47**, 199 (1983).
2. P. Boolchand and Mark Stevens, "Evidence for isoelectronic Sn for Ge substitution in crystalline and glassy GeSe<sub>2</sub>," *Phys. Rev. B* **29**, 1 (1984).
3. Mark Stevens, P. Boolchand, and J. Gonzalez Hernandez, "Universal structural phase transition in network glasses," *Phys. Rev. B* **31**, 981 (1985).
4. Mark J. Stevens and Bala Sundaram, "Static-field effects on the ionization of a sinusoidally driven weakly bound electron," *Phys. Rev. A* **36**, 417 (1987).
5. Mark J. Stevens and Bala Sundaram, "Quantal phase-space analysis of the driven surface-state electron," *Phys. Rev. A* **39**, 2862 (1989).
6. Mark J. Stevens and Mark O. Robbins, "Density functional theory of ionic screening: when do like charges attract?" *Euro. Phys. Lett.* **12**, 81 (1990).
7. Mark J. Stevens and Mark O. Robbins, "Density functional theory of interactions between charged macroions in solution," *Mat. Res. Soc. Symp.* **177**, 237 (1990).
8. Mark J. Stevens, Mark O. Robbins and James F. Belak, "Shear melting in colloids: a nonequilibrium phase diagram," *Phys. Rev. Lett.* **66**, 3044 (1991).
9. Mark J. Stevens and Mark O. Robbins, "Melting of Yukawa systems: a test of phenomenological melting criteria," *J. Chem. Phys.* **98**, 2319 (1993).
10. K. Kremer, Burkhard Dünweg and Mark J. Stevens, "Computer simulations of polymer solutions," *Invited Papers from STATPHYS 18*, *Physica A* **194**, 321 (1993).
11. Mark J. Stevens and K. Kremer, "Molecular Dynamics Simulations of Charged Polymer Chains From Dilute to Semidilute Concentrations", in *Macro-Ion Characterization: From Dilute Solutions to Complex Fluids*, ed. K. Schmitz, ACS, 1993.
12. Mark J. Stevens and K. Kremer, "The form factor of salt-free linear polyelectrolytes," *Macromolecules* **26**, 4717 (1993).
13. Mark J. Stevens and K. Kremer, "The structure of salt-free flexible linear polyelectrolytes," *Phys. Rev. Lett.* **71**, 2228 (1993).
14. Mark J. Stevens and Mark O. Robbins, "Simulations of shear-induced melting and ordering," *Phys. Rev. E* **48**, 3778 (1993).
15. Mark J. Stevens and G. S. Grest, "Coexistence in dipolar fluids in a field," *Phys. Rev. Lett.* **72**, 3686 (1994).
16. K. Kremer, Mark J. Stevens and Phillip A. Pincus, "Non-Debye Screening in Polyelectrolyte Solutions," in *Soft Order in Physical Systems*, eds. R. Bruinsma and I. Rabin, Plenum Press, 1994.

17. B. Dünweg, Mark J. Stevens and K. Kremer, "Structure and Dynamics of Neutral and Charged Polymer Solutions," in *Monte Carlo and Molecular Dynamics Simulations in Polymer Science*, ed. K. Binder, Oxford University Press 1995.
18. Mark J. Stevens and G. S. Grest, "Structure of soft sphere dipolar fluids," Phys. Rev. **E51**, 5962 (1995).
19. Mark J. Stevens and G. S. Grest, "Phase coexistence for the Stockmayer fluid in an applied field," Phys. Rev. **E51**, 5976 (1995).
20. Mark J. Stevens and K. Kremer, "Molecular dynamics simulations of polyelectrolytes without added salt," J. Chem. Phys. **103**, 1669 (1995).
21. Mark J. Stevens, M. Falk and M. O. Robbins, "Interactions between charged spherical macroions," J. Chem. Phys. **104**, 5209 (1996).
22. Mark J. Stevens and K. Kremer, "Structure of Salt-free Linear Polyelectrolytes in the Debye-Hückel approximation," J. de Physique **6**, 1607 (1996).
23. Mark J. Stevens, M. Mondello, G. S. Grest "Simulations of lubricants in confined geometries," in *Dynamics in Small Confining Systems III*, pp. 65-70, Materials Research Society Symposia Proceedings, ed. J.M. Drake, J. Klafter and R. Kopelman
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26. Mark J. Stevens and S. Plimpton, "The effect of added salt on polyelectrolyte structure," Eur. Phys. J. **B2**, 341 (1998).
27. Mark J. Stevens, "Bundle Binding in Polyelectrolyte Solutions," Phys. Rev. Lett. **82**, 101 (1999).
28. Mark J. Stevens, "Thoughts on the structure of alkylsilane monolayers," Langmuir **15**, 2773 (1999).
29. Mark J. Stevens, "Simulations of Polyelectrolytes: counterion condensation, ion capture and bundle binding," in *Simulation and Theory of Electrostatic Interactions in Solution*, ed. L.R. Pratt and G.Hummer (Springer Verlag, NY 1999).
30. Mark J. Stevens, "Simulation of Interfacial Fracture in Highly Crosslinked Adhesives", in *Interfaces, Adhesion and Processing in Polymer Systems*, Materials Research Society Symposia Proceedings 629, (2000), ed. S.H. Anastasiadis, A. Karim, G.S. Ferguson
31. Mark J. Stevens, "Simple Simulations on DNA Condensation," Biophysical J. **80**, 130 (2001).
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33. Mark J. Stevens, "Interfacial fracture between highly crosslinked polymer networks and a solid surface: Effect of interfacial bond density," *Macromolecules*, **34**, 2710 (2001).
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35. S. W. Sides, G. S. Grest and Mark J. Stevens, "Surface-tethered chains entangled in a polymer melt: Effects on adhesion dynamics," *Phys. Rev. E*, **64** 050802(R) (2001).
36. S. W. Sides, G. S. Grest and Mark J. Stevens, "Large-scale simulation of adhesion dynamics for end-grafted polymers," *Macromol.*, **35**, 566 (2002).
37. Itamar Borukhov, Kun-Chun Lee, Robijn F. Bruinsma, William M. Gelbart, Andrea J. Liu and Mark J. Stevens, "Association of Two Sem-Flexible Polyelectrolytes by Inter-Chain Linkers: Theory and Simulations," *J. Chem. Phys.* **117** 462 (2002).
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39. M. Chandross, B. Park, Mark J. Stevens and G.S. Grest, "Frictional Properties of Self-Assembled Alkylsilane Chains on Silica," *Materials Research Society Symposia Proceedings*, **687**, 179 (2002).
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41. S. W. Sides, J. Curro, G. S. Grest, Mark J. Stevens, T. Soddeemann, A. Habenschuss and J.D. Londono "Structure of poly(dimethylsiloxane) melts: theory, simulation and experiment," *Macromolecules* **35**, 6455 (2002).
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45. Mark J. Stevens, J. H. Hoh and T. B. Woolf, "Molecular Insights into the Process of Membrane Fusion from Simulation", *Phys. Rev. Lett.* **91**, 188102 (2003).
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54. C.D. Lorenz, Mark J. Stevens and R. Wool, "Fracture behavior of triglyceride-based adhesives," *J. Polymer Science B* **42**, 3333 (2004).
55. K.C. Lee, I. Borukhov, W.M. Gelbart, A.J. Liu, and Mark J. Stevens, "Effect of mono- and multivalent salts on angle-dependent attractions between charged rods," *Phys. Rev. Lett.* **93**, 128101-1 (2004).
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57. Mark J. Stevens, "Coarse-grained simulations of lipid bilayers," *J. Chem. Phys.* **121**, 11942 (2004).
58. M. Tsige, C.D. Lorenz and Mark J. Stevens, "Role of network connectivity on mechanical properties of crosslinked polymers," *Macromolecules* **37**, 8466 (2004).
59. O. Hehmeyer and Mark J. Stevens, "Molecular dynamics simulations of grafted polyelectrolytes on two apposing walls," *J. Chem. Phys.* **122**, 134909 (2005).
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61. C.D. Lorenz, M. Chandross, G.S. Grest, Mark J. Stevens and E. B. Webb III, "Tribological properties of alkylsilane self-assembled monolayers," *Langmuir* **21**, 11744 (2005).
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65. D.Y. Sasaki and Mark J. Stevens, "Stacked, Folded, and Bent Lipid Membranes," *MRS Bulletin*, pp. 521-526, July (2006).
66. P.S. Crozier, Mark J. Stevens and T.B. Woolf, "Rhodopsin photoisomerization simulation results: the 150 ns after forced cis-trans transition," *Proteins* **66**, 559 (2007).
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69. M. Chandross, C.D. Lorenz, Mark J. Stevens and G.S. Grest, "Simulations of Nanotribology with Realistic Probe Tip Models," *Langmuir* **24**, 1240 (2008). Cover Image.
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72. J.M.D. Lane, M. Chandross, Mark J. Stevens and G.S. Grest, "Water in Nano-confinement between Hydrophilic Self-Assembled Monolayers," *Langmuir* **24**, 5209 (2008). Letter.
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74. Mark J. Stevens and G. S. Grest, "Simulations of water at the interface with hydrophilic self-assembled monolayers," *Biointerphases*, **3**, FC13, (2008). review article.
75. A.E. Ismail, G.S. Grest, D.R. Heine, Mark J. Stevens and M. Tsige, "Interfacial structure and dynamics of siloxane systems: PDMS/vapor and PDMS/water," *Macromolecules*, **42**, 3186 (2009).
76. C. Lorenz, J. M. D. Lane, M. Chandross, Mark J. Stevens and G. S. Grest, "Molecular dynamics simulations of water confined between matched pairs of hydrophobic and hydrophilic self-assembled monolayers," *Langmuir* **25**, 4535 (2009).
77. A.N. Gentilcore, N. Michaud-Agrawal, P.S. Crozier, Mark J. Stevens and T.B. Woolf, "Examining the Origins of the Hydration Force Between Lipid Bilayers Using All-Atom Simulations," *J. Membrane Biology* **235**, 1 (2010).

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79. Mark J. Stevens and J.H. Hoh, "Conformational Dynamics of Neurofilament Side-Arms," *J. Phys. Chem. B* **114**, 8879 (2010).
80. D. Mirijanian and A.N. Dickey and T.B. Woolf and J.H. Hoh and Mark J. Stevens, "Splaying of Aliphatic Tails Plays a Central Role in Barrier Crossing During Liposome Fusion," *J. Phys. Chem. B* **114**, 11061 (2010).